

ABSTRACT OF THE DISCLOSURE

A method and apparatus are provided that calibrate a wideband radio communications system without causing significant interference with simultaneous users of the system. In one embodiment, the invention includes an antenna array adapted to transmit and receive radio communications signals with a plurality of other terminals the communications signals each using a particular minimum bandwidth. A transmit chain transmits a calibration signal through the antenna array to a transponder, and a receive chain receives through the antenna array a transponder signal from the transponder, the transponder signal being based on the calibration signal and having a bandwidth narrower than the minimum bandwidth. A signal processor measures characteristics of the transponder signal as received through the receive chain. These can be used to determine spatial signatures and to calibrate the transmit chain and the receive chain.